# Metastatic Non–Small-Cell Lung Cancer to the Liver and Pancreas

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## CASE REPORT

A 58-year-old woman presented with a persistent cough in November of 2011. She was evaluated at her local emergency room with a chest x-ray (CXR) that documented an old, left clavicular fracture along with a subtle density partially obscuring the right hemidiaphragm, thought to be early infiltrate vs. scarring. A CT scan of the abdomen was also performed that demonstrated healing of right 10th and 11th rib fractures, along with a focal atelectasis vs. an infiltrate in the right lower lobe of the lung and no abnormalities throughout the rest of the abdomen. No further follow-up studies were performed at that time.

In April 2012, the patient started to have progressive symptoms of dyspnea on exertion and shortness of breath, cough, and wheezing. She attributed these to allergies, and, when she did not get relief with over-the-counter medication, she sought further medical attention from her principal care physician.

A CXR in July 2012 demonstrated ill-defined infiltrates in the right lower lobe that were diagnosed as pneumonia. With her report of shortness of breath, her physician ordered a computed tomographic (CT) scan of the chest. The CT demonstrated multiple nodular densities in the right lower lobe, prominent mediastinal lymph nodes (LNs) (with the largest measuring 2.5 × 1.5 cm), multiple hypodense lesions scattered throughout the liver with border enhancement, and a mild contrast-enhancing mass at the tail of the pancreas, measuring 4.5 × 3.5 cm. These findings raised suspicion of malignancy.

A positron emission tomographic (PET) scan was performed in August 2012 that demonstrated a right perihilar mass with cavitary features, measuring 3.8 × 4.8 cm with a standard uptake volume (SUV) of 22.5 (Figure 1); a consolidation in the right lower lobe with an SUV of 19.3, consistent with infiltration; hypermetabolic liver masses too numerous to count (Figure 2); a mass in the tail of the pancreas 3.8 × 6.1 cm, with an SUV of 17.4 (Figure 3); and a retrocaval retroperitoneal LN enlarged with an SUV of 20.1, all consistent with malignancy.

Biopsy from the liver and pancreatic mass in August 2012 showed a metastatic neoplasm with sheets of cells with abundant eosinophilic cytoplasm, hyperchromatic nuclei, and focal keratinization, with frequent mitoses (>10/10 high-power fields). The specimen was positive for p63 and CK5/6 and was negative for CK7, CK20, and HepPar1. These findings are consistent with metastatic squamous cell carcinoma with the lung tumor as the primary site. The patient was offered a biopsy of the lung mass to determine whether the lung tumor was the primary, but at that time she declined.

On the basis of the above results, our plan of treatment was carboplatin and paclitaxel every 3 weeks. We would then reassess disease response with CT scans after 3 cycles of treatment. The total amount of treatment would be 6 cycles, with a goal of palliation, not cure. Unfortunately, the patient had an episode of severe hemoptysis and possible rupture of a vessel before treatment began and expired.

## DISCUSSION

Based on our search of the literature, there have only been a few cases reported of pancreatic metastasis clinically apparent at the time of diagnosis of primary lung cancer.[1,2]

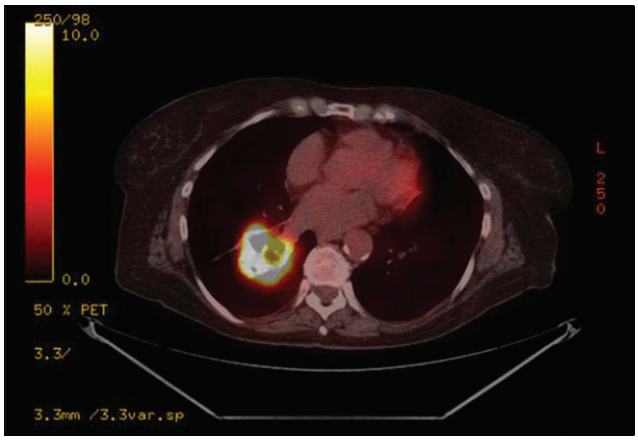


**Figure 1.** PET scan showing an R perihilar mass with cavitary features, measuring 3.8 × 4.8 cm, with an SUV of 22.5.

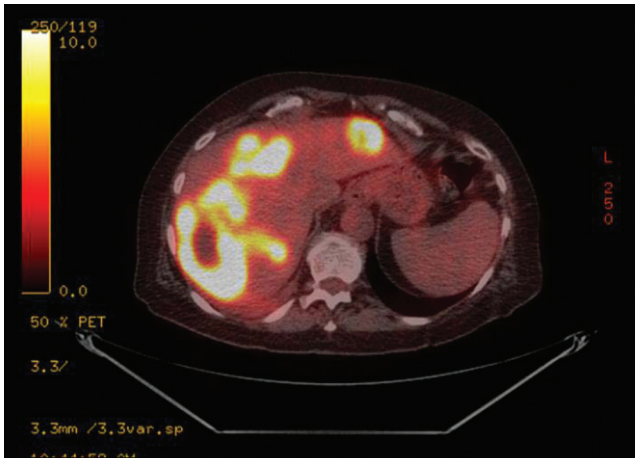


**Figure 2.** PET scan demonstrating multiple hepatic metastatic disease foci.

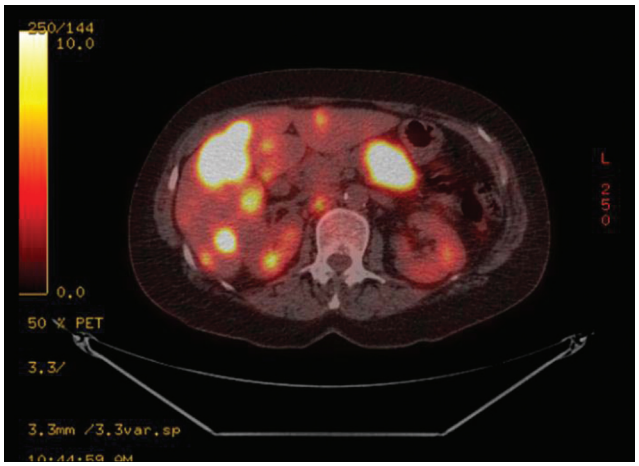


**Figure 3.** PET scan demonstrating a mass in the tail of the pancreas, measuring 3.8 × 6.1 cm, with an SUV of 17.4.

Metastasis to the pancreas, in all cancers including lung, however, is more common than we might think. In a review of the literature, numerous retrospective analyses have been performed on hospital admission data, surgical data, and autopsy findings.[1,3,4] In these analyses, numerous types of tumors have been noted to have metastasized to the pancreas without clinically apparent disease. The most common tumors include colon, stomach, breast, lung, renal cell, and liver.[1–4]

Of 2587 consecutive autopsies from 1973 to 1978, 261 showed metastatic disease to the pancreas and 49 documented the primary source as the lung.[5] In 51 cases, breast cancer was the primary site.[5] In an autopsy review from Shiga University of Medical Science in Japan in 2001, 103 autopsies in cases of secondary pancreatic tumors were reviewed.[3] Of the cases with metastasis to the pancreas, 18 were found to be metastatic from the lung.[3] However, in that study, the most frequent site of primary cancer with metastasis to the pancreas was the stomach.[3] In a Michigan autopsy database analysis published in 2004, the lung was noted as the location of the primary malignancy in 34 of 81 cases of metastatic pancreatic disease.[4] Overall, the incidence of metastatic disease to the pancreas at autopsy ranges from 1.6 to 11%.[1] Our literature search showed that the incidence of the lung as the primary tumor ranges from 3 to 42%.[1–10]

Although metastatic disease to the pancreas is a common finding at autopsy, the incidence of radiographically evident metastatic disease to the pancreas is relatively low. According to a retrospective study by Maeno et al,[9] the most common pattern of metastasis is a solitary nodule in the head of the pancreas. Another study demonstrated that most metastatic tumors to the pancreas occur in women in the 6th and 7th decades of life.[10]

Patients with metastatic disease to the pancreas can present with abdominal pain, weight loss, acute pancreatitis, jaundice, or diabetes and hyperglycemia or can be asymptomatic.[11] In a case report published by Golbin et al[2] the patient was asymptomatic at the time that the pancreatic lesion was discovered. In three other case reports, patients with small-cell lung carcinoma had acute pancreatitis as the presenting feature of metastasis to the pancreas.[6–8]

Multiple studies have demonstrated a poor prognosis with lung cancer metastatic to the pancreas when compared to other primary tumors, especially renal cell carcinoma.[12] The median survival of metastatic lung cancer to the pancreas is approximately 5 months, compared with 12 months or greater in renal cell carcinoma, even if the patient is a surgical candidate.[12]

## CONCLUSION

Our patient was found to have pancreatic metastases at the time of diagnosis of a primary lung tumor at the age of 58. At diagnosis, the prognosis was poor. Therefore, even though lung cancer metastasis to the pancreas is uncommon, it should be considered when performing a metastatic workup.

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### Disclosures of Potential Conflicts of Interest

The authors indicated no potential conflicts of interest.

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